CONTAMINATED SEDIMENTS

What does the indicator tell us?

This indicator shows the chemicals or chemical groups that are measured most frequently at concentrations that might cause adverse ecological or human health effects at a particular site. EPA and others determine concentration levels potentially causing risk by examining the results of field surveys, laboratory toxicity tests, and studies of the chemical's behavior in the environment and in living tissue.

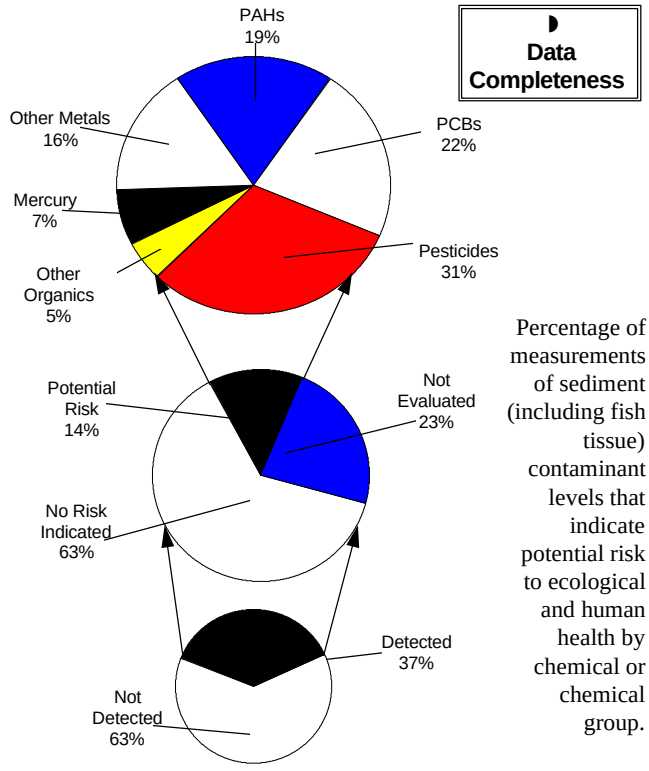
Certain types of chemicals in water tend to settle and collect in sediment. Chemicals in sediment often persist longer than those in water, in part because they tend to resist natural degradation and in part because conditions might not favor natural degradation. Also, these contaminants accumulate at distinct locations in sediment but will disperse in water.

When present at elevated concentrations in sediment, pollutants can be released back to water or accumulate in fish and shellfish and move up the food chain. In both cases, excessive levels of chemicals in sediment might become hazardous to aquatic life and humans.

EPA collects and analyzes sediment and fish tissue data from state, EPA regional, and other monitoring programs as part of the National Sediment Inventory (NSI). The goals of the NSI are to survey data regarding sediment quality nationwide, identify locations that are potentially contaminated, and describe the sources of contaminants responsible for contamination.

Environmental managers can use NSI data and assessments to determine the potential extent and severity of contamination and to identify areas that require closer inspection. In time, NSI data and assessments will reveal trends and help measure progress in minimizing risk.

INDICATOR 15: Contaminated Sediments



Percentage of measurements of sediment (including fish tissue) contaminant levels that indicate potential risk to ecological and human health by chemical or chemical group.

Source: National Sediment Inventory from EPA's Office of Science and Technology, 1993

Proposed Milestone: By 2005, point sources of contamination will be controlled in 10 percent of the watersheds where sediment contamination has been determined to be widespread.

How will the indicator be used to track progress?

EPA will report to Congress every 2 years on the condition of the Nation's sediments. As the NSI grows to include information on more locations and future measurements, EPA and other stewards of environmental quality will gain a better idea of the full extent of contaminated sites and whether conditions have improved or worsened on the whole and at single sites.

EPA's current assessment of sediment quality in the Nation is based largely on chemical concentrations in sediment and in the edible portion of fish that do not migrate and tend to live near sediment. These measures allow EPA assessors to determine the probability that contaminants at the site might cause adverse effects on aquatic life or human health. EPA classifies sites as having a higher probability of adverse effects, an intermediate probability of adverse effects, or no indication of potential adverse effects based on available data.

EPA's assessments can provide a national perspective and indicate the potential contamination problems at specific locations. However, site classification based on NSI data cannot substitute for additional study or application of knowledge at the regional, state, and local levels.

What is being done to improve the indicator?

Future assessments based on NSI data will benefit from the collection of a greater quantity of information addressing conditions at more locations. Although the NSI currently has data representing over 20,000 locations, this coverage represents only 11 percent of the Nation's rivers, lakes, and coastlines. EPA will continue to coordinate with the regional offices, states, tribes, and others to identify and compile additional data.

EPA is committed to using state-of-the-art assessment methods to determine whether sediment at a site poses a risk to ecological or human health. EPA has consulted extensively with experts within the Agency and has commissioned outside scientific review panels to examine its methods. EPA will continue to promote research and improve assessment methods as scientific knowledge in this relatively new field expands.

EPA will also make NSI data and assessments available to all interested individuals and organizations by placing data and summary reports on the Internet at EPA's World Wide Web site.

What is being done to improve conditions measured by the indicator?

EPA assessors can use the NSI to demonstrate the scope of contaminated sediments nationwide and to identify watersheds where further efforts are needed to address potentially serious contamination problems. Further assessment might indicate the need for pollution prevention or remediation. Environmental managers can use pollution prevention and control approaches to reduce point and nonpoint source discharges containing those types of contaminants which accumulate in sediment. This will enable some contaminated systems to recover naturally.

Where short-term risks and effects can be tolerated, the preferred treatment of a contaminated site is to implement prevention measures and source controls and to allow natural processes, such as natural degradation and the deposition of clean sediment, to diminish risk associated with the site. At sites where these measures will not reduce risk in an acceptable time frame, EPA might seek remediation under the appropriate statutory authority.

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